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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,780	11/12/2003	Christian Grewing	P2001,0334	8047

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EXAMINER

JACKSON, BLANE J

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,780

Applicant(s)

GREWING ET AL.

Examiner

Blane J. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 12 November 2003 has been received and placed of record in the file.

Priority

Receipt is acknowledged of papers submitted under 35 U.S. C. 119(a-d), which papers have been placed of record in the file.

Claim Objections

Claim 8 is objected to because of the following informalities: the claim cites the circuit further comprising an amplifier connected to the output of the mixer for rejecting a higher beat frequency where the "amplifier" is expected to comprise a – filter – where it is usual to reject the harmonics or undesired mixer product after mixing prior coupling the signal to a power amplifier and antenna for transmission. This opinion is reflected in the rejection to follow. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman (US 6,782,249) in view of Detering (US 6,850,121).

As to claim 1, Feldman teaches a circuit configuration for the frequency conversion of an oscillator frequency into a carrier frequency comprising:

A circuit node for receiving a signal having the oscillator frequency (figure 3, a direct conversion transceiver, the output of VCO (308) buffer amplifier (330)),

A mixer having a first input, a second input and an output (figure 3, column 2, lines 29-53, mixer (326), the RF signal output frequency is the sum of the input VCO and the VCO frequency divided by integer N),

A first signal path coupling said circuit node and said first input of said mixer for transmitting the signal with the oscillator frequency unchanged in the signal's frequency (figure 3, a first signal path coupling the buffered VCO frequency to an input to mixer (326)),

A second signal path containing a frequency divider having:

An input side coupled to said circuit node (figure 3, divide by N frequency divider (324) coupled to the output of the VCO buffer amplifier),

An output side coupled to said second input of said mixer (figure 3, column 2, lines 51-67, signal path labeled (328), output of divider (324) coupled to input of mixer (326)), and

Said frequency divider providing an output signal at said output side having a *half of a frequency* of an oscillator signal present at said input side (column 2, lines 51-67).

Feldman teaches the divide by two division circuits may be replaced with divide by N division circuits, column 2, lines 54-67, but does indicate N is four such that said frequency divider providing an output signal at said output said having a *quarter of a frequency* of an oscillator signal present at said input side.

Detering teaches a transmit frequency generator comprising a controllable VCO, mixer and divide by N division circuit where the mixer outputs the desired transmit frequency based on the sum of the output signal from the VCO and a the output signal of the VCO divided by N, figure 5, column 2, line 50 to column 3, line 19. Detering further teaches the factor N of the divider supplies a multiple of the number 2 and supplies two output signals which are phase shifted for application in an image reject mixer, figures 5-7, column 3, lines 16-19 and column 5, line 7 to column 6, line 21.

Since Feldman teaches the N of the divide by N division circuits may be a larger integer, column 2, lines 54-67, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize in the divide by N circuit of Feldman value of N that is a multiple of 2 such as 4 as suggested by Detering such that a nonintegral relationship results between the transmit frequency and the oscillator frequency to provide a good degree of immunity to effects.

As to claim 3 with respect to claim 1, Detering of Feldman modified teaches the second signal path contains a low-pass filter (figures 5 and 6 a filter not shown, column 5, lines 49-56, a (low pass) filter element for suppressing harmonics of the divided signal used downstream of the divider (19)).

As to claim 4 with respect to claim 1, Detering of Feldman modified teaches the second signal path contains a low-pass filter disposed downstream of said frequency divider in a signal flow direction (figures 5 and 6 a filter not shown, column 5, lines 49-56, a (low pass) filter element for suppressing harmonics of the divided signal used downstream of the divider (19)).

As to claim 7 with respect to claim 1, Detering of Feldman modified teaches the circuit configuration according to claim 1 further comprising an amplifier connected to said output of said mixer (figure 5, amplifier (4), a PA expected in the transmit circuits of a TDMA transceiver).

As to claim 8, Feldman teaches the circuit configuration according to claim 1 further comprising an amplifier (a filter) connected to said output of said mixer for rejecting a higher beat frequency obtained by addition of frequencies of respective signals present at said first and second inputs of said mixer (figure 3, column 2, lines 51-53, filter (328)).

As to claim 9, Feldman teaches the circuit configuration according to claim 1 further comprising an oscillator coupled to said circuit node and providing the oscillator frequency (figure 3, column 1, 1-41, VCO (308) and buffer (330) coupled to integrated direct conversion radio transceiver).

Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman (US 6,782,249) and Detering (US 6,850,121) further in view of Strange (US 6,574,462).

As to claim 2, Feldman teaches the circuit configuration according to claim 1, wherein said frequency divider is formed as a flip-flop to provide a signal with half a frequency of a signal present at the input, figure 2, column 1, lines 55-65, but does not clearly teach a frequency divide is two frequency dividers formed as two flip-flops disposed one behind another.

Strange teaches a local oscillator apparatus for a direct conversion receiver comprising a mixer coupled to an oscillator input signal and to a second feedback signal such that a local oscillator signal may be produced by a fractional multiplication of the oscillator input signal, the VCO does not have a harmonic relationship with the desired output frequency to avoid interference, column 1, line 23 to column 2, line 50. Strange discloses the feedback path includes a divide by four functions provided by two successive divide by two dividers, figure 4, column 4, lines 28-45.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the single flip-flop in the divide by two frequency division circuit of Feldman modified as the successive divide by two dividers of Strange to achieve a selected divide by four function that supports an oscillator frequency that is not a harmonic relationship of the desired output signal.

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As to claim 5 with respect to claim 2, Detering of Feldman modified teaches the second signal path contains a low-pass filter (figures 5 and 6 a filter not shown, column 5, lines 49-56, a (low pass) filter element for suppressing harmonics of the divided signal used downstream of the divider (19)).

As to claim 6 with respect to claim 2, Detering of Feldman modified teaches the second signal path contains a low-pass filter disposed downstream of said frequency divider in a signal flow direction (figures 5 and 6 a filter not shown, column 5, lines 49-56, a (low pass) filter element for suppressing harmonics of the divided signal used downstream of the divider (19)).

Conclusion

The prior art made of record and not relied upon but considered pertinent to applicant's disclosure includes: Carpineto (US 6,785,528), Darabi et al. (US 6,404,293) and Schenk (US 5,307,029).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 9:00 AM-6:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Ed J. Urban", is positioned below the main text block.